

RemarksApplication Status and Disposition of Claims

This paper responds to the non-final Office Action mailed from the U.S. Patent and Trademark Office on April 26, 2010. In the Action, the Office considered claims 1, 2, and 7, with claims 3-6 and 8 deemed withdrawn from consideration as directed to a non-elected invention.

With the present amendment, Applicants cancel claims 1 and 2 and amend claim 7. The amendment finds support throughout the specification, and specifically, for example, in paragraph [0008] (pages 9-10), and on page 13, lines 7-15. This amendment does not add new matter.

Claim Objections

The Action objects to claim 7 for the use of repetitive language.

In response, Applicants amend claim 7 with this paper to remove the allegedly repetitive language. Applicants respectfully request withdrawal of the objection.

Claim Rejections – 35 U.S.C. § 112, First Paragraph

The Action rejects claims 1 and 2 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.

In response, Applicants note that claims 1 and 2 have been canceled without prejudice or disclaimer of the subject matter recited therein. Applicants respectfully request withdrawal of the rejection.

Claim Rejections – 35 U.S.C. § 103(a)

The Office Action maintains the rejection of claims 1, 2, and 7 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Connell et al. (US 2001/0008169) in view of Kropp et al. (U.S. Patent No. 5,362,421) and Calhoun et al. (U.S. Patent NO. 5,240,761). Applicants

respectfully disagree with the rejection for the reasons previously argued, as well as those that follow.

The Office Action alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the particles of Connell et al. such that the particles are substantially uniformly spaced from their six nearest neighbors, thereby allowing the adhesive sheet of Connell et al. to make reliable electrical connections between facing arrays of tiny closely spaced electrical components.

Applicants note that it appears that Calhoun et al. describes an anisotropic conductive sheet wherein the particles are arranged to be adjacent to six particles. However, Applicants submit that the anisotropic conductive sheet of Calhoun et al. does not relate to the "fine" circuit technology of a level in which the present invention is involved. Calhoun et al. states at column 2, lines 49-57, that "[f]or example, when the electrically conductive particles of the novel tape have a substantially uniform diameter of about 50 μ m and the average distance between adjacent particles does not exceed their average diameter, the novel adhesive tape can interconnect facing arrays of electrical conductors which are about 100 μ m in width and separated by about 100 μ m, without any missed connections or shorting". In other words, Calhoun et al. is discussing "macroscopic" circuits, such that the electrical connection between the circuits can be performed by soldering or the like.

In contrast, the present invention relates to "fine" circuits. In the field of fine technology, in which the particle size is much smaller than the membrane thickness as in the present invention, it is not sufficient to simply reduce the particle size. In such a fine technology field, the resin first flows, and then the conductive particles migrate to form aggregated conductive particles, which can result in reduction of the insulating property, i.e., in a short-circuit. Quite a different problem from that recognized by Calhoun et al. happens in the field of fine circuits.

As noted above, the present invention requires that the average particle distance between adjacent conductive particles is at least once but five times or less the average particle size and not greater than 20 μ m. In contrast, Calhoun et al. allows particles to be arranged as long as the average distance between the adjacent particles does not exceed the average particle diameter.

Calhoun et al. teaches away from the present invention, which requires arranging the conductive particles so that the distance between adjacent particles exceeds the average diameter of the particles. This can be understood from Calhoun et al.'s description that the average diameter of particles is preferably approximately equal to the thickness of adhesive.

Applicants respectfully submit that once it is recognized that the technical field of Calhoun et al. is quite different from the technical field of the present invention and that Calhoun et al. teaches away from the essence of the present invention, it is clear that a person of ordinary skill in the art would not have had reason to combine Calhoun et al. with Connell et al. in view of Kropp et al.

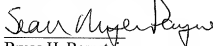
Finally, Applicants respectfully note that the Office Action, at page 7, states that Applicants' arguments are not commensurate in scope with the claims. Applicants respectfully submit that with the present amendment and remarks, the arguments are commensurate in scope with the claims.

Applicants respectfully request reconsideration and withdrawal of the outstanding obviousness rejections in view of the foregoing remarks and amendments.

Conclusion

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections of record, and allow each of the pending claims. Applicants therefore respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Respectfully Submitted,
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